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CIA-RDP85T00875R00170003

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**DIRECTORATE OF
INTELLIGENCE**

Intelligence Memorandum

Soviet Agriculture in 1971 and the Outlook for 1972

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March 1972

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CENTRAL INTELLIGENCE AGENCY
Directorate of Intelligence
March 1972

INTELLIGENCE MEMORANDUM

SOVIET AGRICULTURE IN 1971 AND THE OUTLOOK FOR 1972

Conclusions

1. Even though farm production in 1971 was near the record 1970 level, the Soviet Union spent roughly \$650 million-\$700 million in hard currency to purchase large quantities of grain, sugar, and meat in 1971 and early 1972. Imports of grain are likely to continue and may even increase next year because they are required to support the growth of the Soviet livestock economy so as to provide more meat and milk to the increasingly demanding Soviet consumer.
2. Net agricultural production in 1971 declined 1.5% as a 5% increase in the output of animal products failed to offset a 2.5% drop in crop production and a slower growth of livestock herds. Net production of grain -- estimated at 148 million metric tons -- was slightly off the 1970 level while potato, sugar beet, and vegetable crops all dropped by 5% to 8%. Meat production increased 7% on the heels of a 5% gain in 1970.
3. In an effort to raise output and reduce weather-induced fluctuations in production, enormous amounts of resources have been poured into Soviet agriculture. The farm sector now receives about one-fourth of all investment in buildings, structures, and equipment. In addition, 37 million persons work in agriculture, and deliveries of fertilizer, spare parts, fuel, and electric power from industry are increasing at a high rate. Despite this attention, the farm sector cannot keep up with the demands stemming from new consumer programs.
4. The growing imports of agricultural commodities during two years of abundant harvests reflect official determination to upgrade the Russian diet. Per capita consumption in the Soviet Union is still markedly less than in other industrialized countries. As disposable incomes increase on an

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already determined schedule, consumer demand for meat rises about proportionately. Production of meat and other livestock products has difficulty keeping up with demand, and shortages are endemic. The rapid increase in meat production in 1970-71 eased the meat shortage somewhat but also boosted the feeding of grain to livestock by some 25%. These demands in turn could not be met from current grain production, and large imports and withdrawals from grain stocks were necessary. In the past, grain reserves over and above strategic stocks were used to compensate for production shortfalls, but these reserves are now thought to be low.

5. This winter, the fragility of the USSR's grain and livestock economy has been exposed once again. Severe cold combined with sparse snow cover may have destroyed up to one-third of the winter grain crop. While the winter damage can be repaired by resowing and by increased attention to the surviving winter crops and to spring crops, the weather will be a critical factor from now on. Even with average weather, the USSR will probably import more grain in late 1972 than the three and one-half million tons already contracted for in order to maintain the momentum of its meat program while satisfying export commitments to Eastern Europe and other dependent countries. If the weather this spring and summer turns out to be worse than normal, the prospects for large additional Soviet imports of foreign grain would of course be even brighter.

Introduction

6. Although Soviet agricultural production fell slightly from the record level achieved in 1970, 1971 still proved to be the second best year on record. Nevertheless, the USSR has been uncharacteristically active as an importer of agricultural commodities during the past six months. The seeming paradox of the Soviet Union using its scarce foreign exchange to purchase agricultural products after two bumper years is explained in part by the fact that in recent years a subtle shift has occurred in Soviet consumer policy. The regime apparently is no longer willing to permit food consumption to follow the whims of Russian weather but rather requires a steady increase in the quality of the Russian diet. Since assuming power, Brezhnev has associated himself with this policy and has demonstrated his willingness to take costly measures to avoid its failure.

7. By all outward appearances, the Soviet leadership should be at least moderately satisfied with the progress of its agricultural sector. Under Brezhnev, the value of per capita consumption of food has increased by an average of 3-1/2% per year since 1965. Also, investment in agriculture has climbed rapidly and now claims 26% of each year's investment in buildings and equipment. Meanwhile, the support provided to agriculture by industry in the form of fertilizer, electric power, and the like continues to increase.

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8. Yet, as the recent large international purchases of grain, sugar, and meat indicate, Brezhnev and his policy are by no means out of the woods. The attempt to shift from a largely starchy diet - bread and potatoes - to one rich in meat and dairy products demands further substantial increases in feed grains as well as other costly inputs of industrial origin. Moreover, the fragile agricultural balance is always threatened by the possibility of bad weather.

9. This memorandum describes farm output in 1971 and the prospects for 1972. It then discusses the considerations bearing on the domestic supply of key agricultural products in an attempt to gauge the extent of Soviet interest in additional imports of agricultural products from the West.

Discussion

Agricultural Developments in 1971

10. In 1971, Soviet farm output fell 1.5% from 1970's record level but was still 8% above average yearly production in 1966-70 (see Table 1). An increase of almost 5% in the production of meat and other animal products was outweighed by a decline of 2.5% in crop output and smaller additions to livestock inventories.

11. The production of major crops fell below the 1970 level. Grain production dropped slightly, although record yields were reported in some parts of the country. The output of sugar beets, potatoes, and sunflower seeds not only was below that of 1970 but also was less than average annual production in 1966-70. Cotton was an exception, as output climbed to record levels despite drought conditions in the major growing regions.

12. Poorer weather accounts for the failure of the 1971 crop to match the previous year's record. Untimely rains and wind lodged the grain in portions of the Ukraine and Moldavia, and early summer drought in the Central Black Soil Zone and the lower Volga Valley reduced winter wheat yields in these areas.⁽¹⁾ Cool, wet weather delayed seeding and retarded crop development in many spring grain areas. In most major areas, however, conditions for spring grains improved to such an extent that above-average or record yields were reported. In late July and August, a lack of adequate soil moisture and hot, dry weather trimmed corn, sugar beet, and potato

1. Lodged grain results when stalks break or bend and form a flattened or tangled mass which is difficult to cut.

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Table 1

USSR: Production of Major Crops
and Animal Products

	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>
	Annual Rate of Growth (Percent)					
Total value of farm output <u>a/</u>	8.5	-1.1	5.4	-4.1	13.3	-1.5
Crops <u>b/</u>	15.0	1.1	7.3	-8.1	14.3	-2.5
Animal products <u>c/</u>	7.0	6.0	2.1	-1.8	4.5	4.8
Physical production of major farm com- modities	Million Metric Tons					
Grain <u>d/</u>	140	122	135	128	150	148
Potatoes	88	95	102	92	97	92
Sugar beets	74	87	94	71	78	72
Cotton	6.0	6.0	6.0	5.7	6.9	7.1
Vegetables	17.9	20.5	19.0	18.7	21.2	20.0
Meat	9.5	10.1	10.2	9.9	10.4	11.1
Milk	71.4	75.1	77.4	76.6	77.9	78.3
	Billion					
Eggs	31.7	33.9	35.7	37.2	40.7	44.9

a. Agricultural output for sale and home consumption net of uses of farm products as seed and livestock feed. Price weights for 1968 have been used in aggregating the physical output of crops and animal products (including changes in inventories of livestock).

b. Value of food and technical crops less seed but including the portion fed to livestock.

c. Value of output of meat, milk, eggs, and wool.

d. Estimated, see Figure 1.

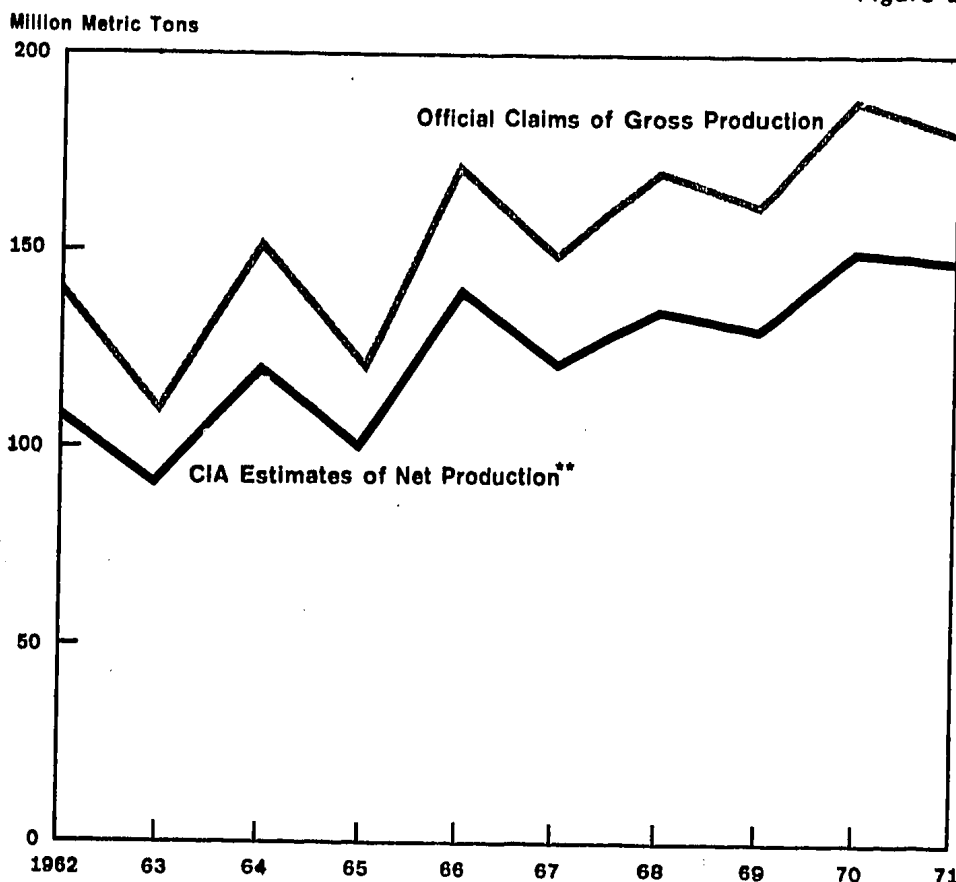
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yields. On the whole, weather conditions were unfavorable only in comparison with the excellent conditions prevailing in the banner year of 1970. Over its vast farm lands, the USSR had a normal incidence of bad weather in what was in general at least an average year.⁽²⁾

Grain Production in the USSR*...

Figure 1



*Including pulses.

**CIA estimate of usable grain. Net usable grain is estimated as the officially claimed gross output minus excess moisture, unripe and damaged kernels, weed seeds and other extraneous materials, post harvest losses incurred in loading and unloading grain between the grain harvesting combine and storage facilities, and suspected biases in the official reporting of grain production.

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13. The production of animal products fared better, as feed grains and fodder provided by the excellent 1970 harvest permitted an increase in meat output and a continued buildup of livestock inventories. The overall value of livestock inventories at the end of 1971 was at an all-time high.

14. The Soviet farm sector continued to receive priority treatment in 1971 in terms of the resources devoted to it. Except for trucks, percentage increases in machinery and fertilizers delivered to agriculture compared favorably with those achieved in 1966-70, as shown in the

2. Evaluated by deviations of yields from long-run trends, 1971 was somewhat above average, ranking ninth in a span of years covering 1950-70. With the exception of 1969, all of the years since 1965 were better than average, according to this criterion.

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tabulation. Very little progress was made in pruning the farm labor force, however. Employment in agriculture declined slightly from about 37-1/2 million persons in 1970 to approximately 37 million in 1971 but still represented 30% of the Soviet labor force.⁽³⁾

<u>Deliveries to Agriculture</u>	<u>Average Annual Percentage Change</u>	
	<u>1966-70</u>	<u>1971</u>
Trucks	14½	-8½
Tractors	7	1
Other agricul- tural machinery	5	10½
Mineral fertilizers	11	10½

Grain

15. Soviet production of usable grain in 1971 totaled 148 million tons, slightly below the record harvest of 150 million tons in 1970 but still the second largest crop in Soviet history (see Figure 1). Since 1959, production of grain has expanded at an average annual rate of about 3-1/2% - faster than the 3% yearly growth of net agricultural production. However, the growth of grain production has fluctuated widely, largely because of variations in weather conditions.

16. Higher yields rather than expanded acreage are responsible for the increases in grain production since 1959.⁽⁴⁾ The 1971 average yield per hectare, although 1% below the 1970 level, was about 15% above the average yield in 1966-70 and 50% above the 1961-65 average. Factors contributing to these higher yields include: (1) increased use of mineral fertilizer and other agricultural chemicals, (2) improved varieties of grains, and, to a lesser extent, (3) increased mechanization, (4) land improvement through irrigation and drainage, and (5) expansion of proper crop rotation and other improved cropping practices.

17. The growing share of available fertilizer used on grain is the principal cause of the increased grain yields. The USSR claims that each

3. This figure includes only those persons mainly or exclusively engaged in farm activity. Another 35 million - 40 million persons from nonagricultural households participated in some kind of farm activity during the year.

4. In 1971 grain was harvested from about 118 million hectares, roughly 1 million hectares below the area harvested in 1970 and about 4 million hectares below the average in 1966-70 (1 hectare equals 2.471 acres). The grain area has declined about 11% since the all-time high reached in 1964.

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additional ton of fertilizer results in an additional one and one-half tons of grain. In any case, more than 11 times as much fertilizer was applied to grain in 1971 as in 1960, as shown in the following tabulation:

<u>Year</u>	<u>Fertilizer Used on Grain</u>	
	<u>Million Tons</u>	<u>Percent of Total Supply</u>
1960	1.8	16
1966-70, average	11.5	31
1971	20.0	37
1975 Plan	33.0	44

18. A large part of the country's additional grain output in the late 1960s compared with the first half of the decade is attributable to expanded use of fertilizer on the "non-black soil zone" of the northern part of European USSR, where, with generally adequate moisture, application of fertilizer on well-limed soil provides high and stable yields. In this region, production of grain in 1969 and 1970 averaged 25-1/2 million tons, more than 80% above the annual average level of output attained in 1961-65. As a result, this area, which accounted for only 13% of the country's total production in 1961-65, provided more than one-third of the country's total increase in average yearly grain production in the 1969-70 period compared with 1961-65.

19. Improved varieties of grain are credited with increasing grain output by 4 million to 5 million tons per year, and the increased use of clean fallow land for winter wheat reportedly adds several million tons of additional grain each year.⁽⁵⁾ Stubble-mulch tillage practices are being used on less than 15% of the grain area but are credited with boosting grain output by another 3 million tons.⁽⁶⁾

Other Crops

20. The production of sugar beets fell to about 72 million tons in 1971, 8% below the 1970 crop. Weather played the major role in restricting beet yields. A lack of rainfall in midsummer seriously retarded the growth

5. Clean fallowed land is not seeded in the current year but, rather, is tilled in such a manner as to accumulate moisture and fertility for the benefit of crops sown in subsequent years.

6. In stubble-mulch tillage, the soil is cultivated in such a manner that a considerable part of the plant residue is left on the surface, protecting the soil against erosion and assisting retention of moisture in the soil.

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and development of the beets in the early stages. Although late season rains may have helped yields to some extent, they also reduced the sugar content of the beets.

21. The weather conditions that depressed sugar beet yields also restricted the production of potatoes. In all, about 92 million tons of potatoes were harvested, 5% less than the 1970 level but only 3% below the average for 1966-70. Since roughly one-third of the potato crop is used for feed, a shortfall in output raises the demand for feed grains. This is particularly true in the private sector, which produces about 65% of all potatoes.⁽⁷⁾

22. Production of sunflower seed declined to 5.2 million tons,⁽⁸⁾ the lowest level since 1965 and 11% below the average for 1966-70. Sunflower seed normally provides almost three-fourths of the USSR's output of vegetable oils. Since production of the other major source of vegetable oil - cotton seed - rose by only 2% in 1971, the reduction in sunflower seed output, representing 140,000 tons of oil, is a major loss. Vegetable oil extraction in the first two months of 1972 was running 8% below the level of January-February 1971.⁽⁹⁾

23. Cotton was the highlight of 1971 crop production. Because of an early season drought in Central Asia, there was uncertainty throughout the growing season as to whether enough irrigation water would be provided. As a result of emergency measures, however, sufficient water was provided, and the improved irrigation together with warm weather led to an early ripening of the crop and a long harvest period. About 7.1 million tons of raw cotton were harvested, surpassing 1970's previous record production of 6.9 million tons. Output in 1970 and 1971 averaged 23% above the 1969 level and 17% above the 1966-68 average. About half of the gain stems from an increase in the area of cotton cultivation, and the rest from higher yields.

24. The campaign to improve the quality of the Soviet diet encountered somewhat of a setback as the vegetable crop fell almost 6% from the 1970 level. On the other hand, output of fruit, which probably remained near the 1970 level, was 28% above the average for 1966-68. This welcome spurt in the fruit supply had its origin in an expansion of one-third in the stock of mature fruit trees. Two-thirds of this growth

7. Certain private economic activities are permitted in the USSR under strict government control. Private agriculture consists of cultivating garden plots ranging in size up to an acre and one-half, tending small flocks of poultry, and keeping small holdings of livestock. The private sector accounts for roughly 30% of net farm output.

8. CIA estimates, 92% of official claim.

9. Traditionally, the USSR is a major exporter of sunflower seeds and sunflowerseed oil, supplying three-fifths of world exports of both of these commodities in 1969.

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occurred in private plots, the consequence of the regime's more relaxed attitude in the mid-1960s, after Khrushchev's political demise.

Livestock Production

25. The livestock sector in 1971 continued the gains begun in 1970, as production of some animal products registered substantial increases. An increase of about 7% in meat output, following a 5% increase in 1970, partly fulfilled some of Brezhnev's earlier promises to improve the quality of the Soviet diet. Egg production rose 10% in 1971, but milk and wool production increased by only 0.5% and 1%, respectively.

26. In the past, large increments in meat production often came at the expense of existing livestock herds. In 1971 a more abundant supply of feed grains from the record 1970 harvest and a more liberal use of wheat as feed enabled the USSR to increase the value of its livestock inventory by 3-1/2% (see Table 2). Nevertheless, the absolute growth in livestock herds was half as large as in 1970, so the net increase in the output of the livestock

Table 2

USSR: Change in Livestock Herds

	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>
	<u>Million Head, End of Year</u>					
Number of livestock						
Cattle	97.1	97.2	95.7	95.2	99.2	102.4
Hogs	58.0	50.9	49.0	56.1	67.5	71.4
Sheep and goats	141.0	144.0	146.1	135.8	143.4	145.4
	<u>Annual Rate of Growth of Value (Percent)</u>					
Livestock inventories						
Total value	2.7	-1.9	-1.5	1.1	7.2	3.6
Socialized	3.0	-0.6	-0.6	3.8	8.5	5.1
Private	2.1	-5.1	-3.8	-5.9	3.6	-1.2

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sector was less than 1% in 1971, compared with 12% in 1970.⁽¹⁰⁾ However, the amount of meat obtained per animal is increasing. This higher yield results primarily from the greater use of high protein and other concentrated feeds⁽¹¹⁾ and, to a lesser degree, from better livestock-raising practices. Nevertheless, as the following tabulation shows, the USSR uses relatively less concentrated feeds than the United States.

<u>Year</u>	<u>Concentrated Feeds as a Percent of Total Feed Supply</u>	
	<u>USSR</u>	<u>US</u>
1965	23.2	43.9
1966	24.1	43.7
1967	25.1	43.3
1968	26.0	45.1
1969	28.6	46.3
1970	30.8	N.A.

27. Only the communally held herds in the socialized sector increased in 1971. The downturn in livestock holdings in the private sector was probably a consequence of the meat program itself, not of any new campaign against the private producer. The buildup of herds in the socialized sector has centered on grain-consuming types of meat producers - hogs and poultry - which respond relatively quickly to a step-up in feeding rates.⁽¹²⁾ The boost in herd size since 1970, taken together with the rise in the output of meat and other livestock products, is a modest response to the large increase in grain made available to state and collective farms for feeding. Because of inefficiency in the livestock industry, the USSR has needed about twice as much grain as the United States to produce

10. The output of the livestock sector consists of the value of meat, milk, eggs, and wool and the value of the change in inventories of livestock. Therefore, the contribution of a change in livestock inventories to the growth of output of the livestock sector can be negative if the rate of growth of livestock inventories slows.

11. Concentrated feeds are low in fiber and high in total digestible nutrients. They include the various grains and high-grade by-products: wheat bran, soybean meal, cottonseed meal, fish meal, and the like.

12. All of the increase in meat output between 1968 and 1971 was attributable to increased production of pork and poultry.

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a given amount of meat.⁽¹³⁾ Thus, as the number of animals on state and collective farms soared, the demand for high-protein and other concentrated feedstuffs rose in the socialized sector, making it more difficult for individuals to procure feed for privately owned livestock. In addition, the downturn in the production of sugar beets and potatoes limited the availability of other, non-grain feedstuffs. Despite the decline in the number of privately held animals, however, the private sector still supplied more than one-third of the meat and milk consumed in 1971 and more than one-half the eggs.

Outlook for Agricultural Production in 1972

28. The outlook for agriculture in 1972 is uncertain at best. After two years of favorable weather and high agricultural output, the USSR is still significantly off the pace dictated by the Ninth Five-Year Plan (1971-75). Inputs to agriculture in 1972 will increase, but not at a rate that will ensure an appreciable gain in agricultural output. Moreover, up to one-third of the USSR's winter grain crop -- mainly winter wheat and winter rye -- may have been destroyed by severe cold. Abnormally low temperatures hit the heart of the Soviet winter grain belt in mid-January, at a time when there was little snow cover to protect the seedlings. The full extent of the damage to the winter grains will depend on the weather this spring. That part of the crop not yet affected is still vulnerable because soil moisture is low in some areas.

29. The impact of the winterkill on the expected grain crop can be averted by reseeding with spring grains and by more generous use of fertilizer on surviving winter grains. According to preliminary calculations, a grain crop of about 185 million tons by Soviet definition -- that is, about 150 million tons of usable grain -- would have been expected in 1972 under average weather conditions. By resowing and undersowing the damaged areas with spring grains while adding 1 million hectares to the roughly 119 million hectares of total area originally intended to be sown to grain, the USSR could still harvest the expected grain crop. The net loss to the farm sector and to the economy thus could be as little as the 2 million to 2.5 million tons of grain expended in resowing and the loss in fertility of the lands taken out of normal rotation. To bring the rescue off, however, the farms

13. The ratios for pounds of feed required per pound of gain in weight of hogs and poultry in the USSR are about double those in the United States. Broilers are raised from chicks to market weight in 8 weeks in the United States, compared with 12 to 14 weeks in the USSR, and 6 months for marketable-weight hogs in the United States, compared with about 10 months in the USSR. This difference in relative feeding efficiency between the two countries is in part due to the poor quality (low protein content) of Soviet feed rations, in part to relatively poor breeding stock, and, in the case of livestock in the socialized sector, to inefficient management practices.

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must have favorable weather to accomplish the additional field work required and sufficient fertilizer to maintain the yields of the surviving winter grains.

30. Although the winter damage might be repaired, the grain situation remains precarious. Three of the last four years have been excellent for grains from the standpoint of weather, but, under Soviet conditions, grain yields are highly sensitive to variations in precipitation and temperature. For example, there is one chance in five that the expected crop of 185 million tons, which is based on long-run trends in yields, could be as low as 170 million tons – or about 135 million tons of usable grain. The Soviet leaders, who have lived through many disaster years, are worried about odds such as these and realize that even a somewhat below-average grain year will endanger their meat program.

31. The unusually severe winter apparently is hurting other sectors as well. The Soviet press has reported above-normal losses of sheep in Central Asia.⁽¹⁴⁾ Winter damage is also reported in the fruit orchards in Central Asia and in the southern areas of European Russia; again, the full extent of damage is unknown, but any damage will hinder the current efforts to improve the quality of the diet. Soviet leaders are already worried about potential agricultural losses. A round of meetings of Party and government leaders with farm representatives was held in February and March to assess the damage and to plan the recovery.

32. Prospects are brighter in one of 1971's problem areas – sugar beets. Plans for 1972 call for increased output of sugar beets. The area sown to beets has been gradually declining since 1964 (the total drop by 1970 was 18%), but this was more than offset in 1967 and 1968 by higher yields. Unfavorable weather was mainly responsible for depressing yields below planned levels in the last three years. In any event, the USSR should be able to assure its sugar supply, without a rise in imports of cane sugar from Cuba, by increasing the area sown to sugar beets and by giving them a larger share of the growing output of mineral fertilizers.

Outlook for Net Domestic Supply and Foreign Trade

33. The shortfalls in 1971 farm output, the doubtful aspect of the 1972 crop year, and the insistent demands of the livestock sector have already led the USSR into the international market. During most of the last two decades, the USSR has been a net importer of agricultural products, but the estimated value of net trade in FY 1972 is four times greater than

14. Although there is no indication of the magnitude of the current losses, extreme winter weather in early 1969 contributed to a decline of about 9% in the country's total number of sheep and goats.

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that for FY 1969, reaching roughly \$1.2 billion. While the domestic supply situation is tight for many agricultural products, the prospects for, and speculation about, large new purchases center on those commodities for which the Soviet Union recently paid \$650 million-\$700 million in hard currency in 1971 and early 1972 - grain, sugar, and meat. The concluding sections of this memorandum survey the possibilities for additional Soviet purchases of these three commodities.

Grain

34. A stable and adequate supply of grain is crucial to the Soviet agricultural program; yet, even after two above-average harvests, grain stocks are clearly less than satisfactory. The major factor eroding the adequacy of the grain base has been the rapidly rising demand for grain in response to the campaign to alleviate meat shortages and build livestock inventories. Because the increase in livestock holdings has centered on hogs and poultry - animals which reproduce and develop rapidly but which also require more grain than cattle and sheep - the demand for grain for feed grows faster than overall livestock inventories would indicate.

35. Although there has been a marked rise since 1969 in the production of feed grains (barley, oats, and corn), the feeding of wheat also increased considerably. In 1969 and 1970 the government sanctioned the use of wheat for feed by releasing several million tons from its reserve stocks for this purpose. In 1971 the supply of feed grains grew only slightly while the number of hogs and poultry reached record levels. The level of usable grain production in the past two years - 150 million and 148 million tons, respectively - is inadequate to meet the requirements of increasing domestic meat supplies and of maintaining the current level of exports. The USSR must either dip further into reserve stocks of questionable adequacy or import grain.⁽¹⁵⁾

36. Last December, Minister of Agriculture Matskevich suggested that the USSR would be interested in importing feed grains and possibly protein supplements from the United States on a regular basis during the next few years. On 14 March, Ambassador Dobrynin told Assistant Secretary of State Hillenbrand that the Ministry of Foreign Trade was ready to meet with a US delegation for negotiating a long-term agreement for purchases of feed grains and soybeans on credit. In response, Secretary of Agriculture Butz will go to Moscow for preliminary talks on 8 April, and a Department of Agriculture negotiating team will initiate talks with the USSR on 10 April. Soviet interest in importing grain from the United States, however, reportedly depends on the negotiations of long-term credits for these imports. This clearly indicates that the Soviet interest indeed extends beyond the immediate future.

¹⁵. For a discussion of the current state of Soviet grain reserves, see the Appendix.

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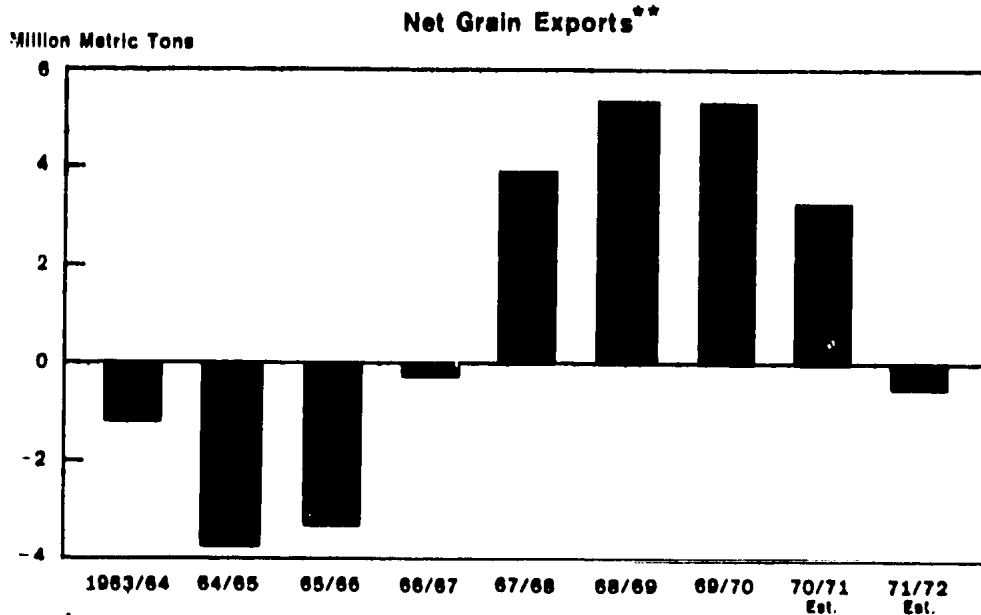
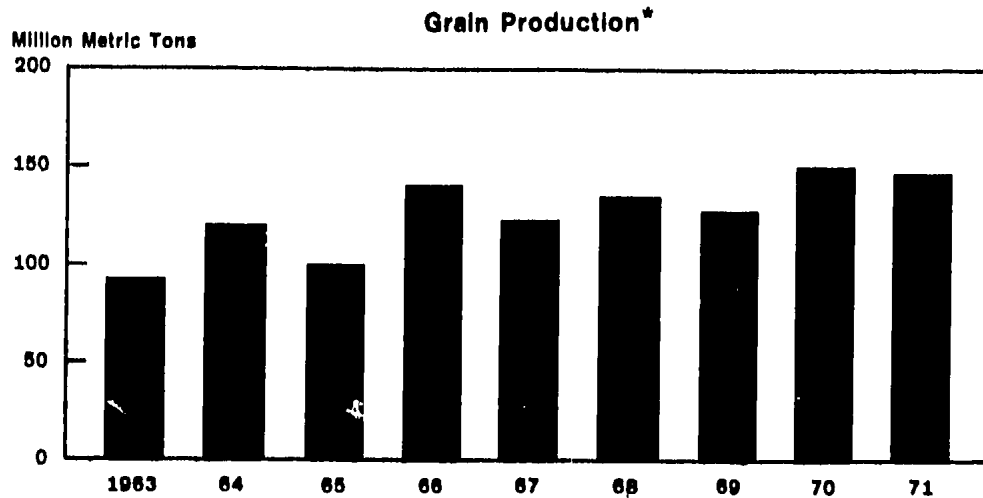
37. Importing US corn and soybean meal could be of great help to the meat program. The current Soviet emphasis on the production of pork and poultry makes the availability of balanced rations rich in concentrated energy, proteins, and other nutrients particularly important. The rate at which swine and poultry convert feed to meat depends on the energy of the ration they receive, especially in the early part of an animal's life when the potential for growth is greatest. Corn and soybean meal are ideal ingredients for rations with high energy and balanced nutrients. Corn has more energy per unit of weight than any other grain and is probably the cereal most palatable to farm livestock. Soybean meal is also palatable, and its protein content is of very high quality compared with most other plant proteins. The United States is the largest producer and exporter of these crops, while the USSR's climate favors small grains rather than corn and also restricts the cultivation of soybeans. Substitutes for the corn-soybean combination are of course to be found in the USSR but are less desirable and -- most importantly -- are in short supply.

38. Thus the USSR's traditional role as a large net exporter of grain may be ending. During the last decade, the Soviet Union became a net importer only after the disastrous harvests of 1963 and 1965 (see Figure 2 and Table 3). Soviet imports of grain during FY 1972, however, are expected to approximate 8-1/2 million tons (see Table 4), almost four times the average imports in 1967-70.⁽¹⁶⁾ Of this total, approximately 4 million tons are feed grains, the remainder wheat. During FY 1971 the Soviet Union exported an estimated 6 million tons of grain to Eastern Europe and about 1-1/2 million to 2 million tons to other major recipients -- Cuba, Egypt, North Korea, and North Vietnam. Although Soviet grain exports for FY 1972 can not be predicted with certainty, it is estimated that they will approximate the amount shipped in recent years. It is likely, therefore, that the Soviet Union will be a net importer of grain in FY 1972.

39. Soviet intentions with regard to grain imports beyond FY 1972 are indicated by a February agreement to buy 3.5 million tons of Canadian wheat, valued at \$230 million, with delivery starting in July 1972 and continuing into 1973. The agreement also gives the USSR an option to purchase an additional 1.5 million tons, worth \$100 million. The basic contract, the first to cover deliveries after June 1972, is in keeping with

16. Of this amount, not more than 7.2 million tons are expected to be delivered to the USSR. The remainder is scheduled for delivery to Eastern Europe and other dependent states.

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CONFIDENTIAL**USSR Becomes Net Grain Importer—
Despite Upward Trend in Production . . .****Figure 2**

*CIA estimates of net production.

**Data are an average of two calendar years, except for FY 1971/72.

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Table 3

USSR: Production, Exports,
and Imports of Grain a/

Thousand Metric Tons				
<u>Year</u>	<u>Production of Usable Grain</u>	<u>Exports</u>	<u>Imports</u>	<u>Net Exports <u>b/</u></u>
1960	93,000	6,879	774	6,105
1961	109,500	7,869	730	7,139
1962	109,000	8,168	415	7,753
1963	92,000	6,702	3,690	3,012
1964	120,000	3,959	9,013	-5,054
1965	100,000	4,684	7,028	-2,344
1966	140,000	4,041	8,482	-4,441
1967	122,000	6,737	2,876	3,861
1968	135,000	6,195	2,231	3,964
1969	128,000	8,071	1,344	6,727
1970	150,000	6,802	2,841	3,961
1971	148,000	7,500 to 8,000 <u>c/</u>	5,250 <u>c/</u>	2,250 to 2,750 <u>c/</u>
Jan-Jun 1972	N.A.	4,000 <u>c/</u>	5,700 <u>c/</u>	-1,700 <u>c/</u>

a. Including flour (converted into equivalent grain by using a 72% extraction rate) and groats.

b. A minus sign denotes net imports.

c. Preliminary estimate.

past USSR-Canadian agreements.⁽¹⁷⁾ The option, which must be exercised by 1 September 1972, appears to be an attempt by the USSR to hedge against losses in the current winter grain crop.

40. In addition, the USSR's grain exports could grow during FY 1973. The adverse weather that caused winterkill in the Soviet Union also damaged the crop in Eastern Europe. Increased demands from Eastern Europe could be coupled with greater commitments to other dependent states such as North Vietnam - which has suffered from floods - and new commitments to countries such as Bangladesh.

17. Normally, a portion of USSR-Canadian contracts is used to satisfy part of the Soviet commitments to Cuba. In 1971, about one-half the wheat or wheat equivalent in the form of flour shipped to Cuba by the USSR came from Canada, and in some years this Canadian grain supplied practically all of Cuba's requirements of about 800,000 tons.

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Table 4

Soviet Grain Purchases
June 1971 - March 1972

Commodity and Origin	Present Soviet Commitments to Purchase Grain ^{a/}	Million Metric Tons	
		For Delivery In:	
		FY 1972	FY 1973
Wheat	<u>8.02</u>	<u>4.52</u>	<u>3.50</u>
Canada	7.02 ^{b/}	3.52	3.50
Australia	0.50	0.50	--
France	0.50	0.50	--
Barley	<u>2.20</u>	<u>1.90</u>	<u>0.30</u>
United States	1.95	1.65	0.30
France	0.25	0.25	--
Corn and grain sorghums	<u>2.25</u>	<u>1.65</u>	<u>0.60</u>
United States	2.25	1.65	0.60
Oats	<u>0.45</u>	<u>0.45</u>	--
United States	0.35	0.35	--
Finland	0.05	0.05	--
Sweden	0.05	0.05	--
Total	12.92	8.52	4.40

a. Not all deliveries will be made to the USSR. For example, deliveries from Canada in FY 1972 include 350,000 tons of wheat equivalent in the form of flour for Cuba. In addition, at least 800,000 tons of wheat and 150,000 tons of barley are scheduled for delivery to Eastern Europe.

b. The USSR has an option to buy an additional 1.5 million tons.

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41. If these additional commitments materialize and the regime's domestic policies for improvement in the diet are maintained, the size of the current harvest will become especially important. At present, the outlook for 1972 grain production is uncertain. However, in view of the Soviet grain requirements -- both foreign and domestic -- even if an average grain crop is obtained, it is almost certain that the USSR will purchase additional grain in FY 1973.

Sugar

42. By drawing down wholesale and retail sugar stocks, the USSR managed to maintain the 1971 per capita consumption of sugar at the 1970 level despite a drop in refined sugar production from 10.2 million to 9.0 million tons. At the same time, the USSR probably was able to maintain exports of refined sugar close to 1.1 million tons, the average level in 1966-70.

43. Soviet sugar is produced both from domestic sugar beets and from imported Cuban sugar. During the past few years, poor Soviet harvests have been offset during the following year by increased imports from Cuba (see Figure 3), which have accounted for as much as one-fifth of the total output of refined sugar. In late 1971, mediocre sugar harvests in both Cuba and the USSR forced the Soviets to enter the world sugar market to avoid further drawdowns on reserves. Since the end of 1971, the USSR has purchased an estimated 900,000 tons of refined sugar, and the Soviet presence in the sugar market has helped to drive world sugar prices to the highest level since 1963.⁽¹⁸⁾ The total cost of the Soviet contracts is now estimated at \$100 million to \$125 million, most of which is payable on delivery.

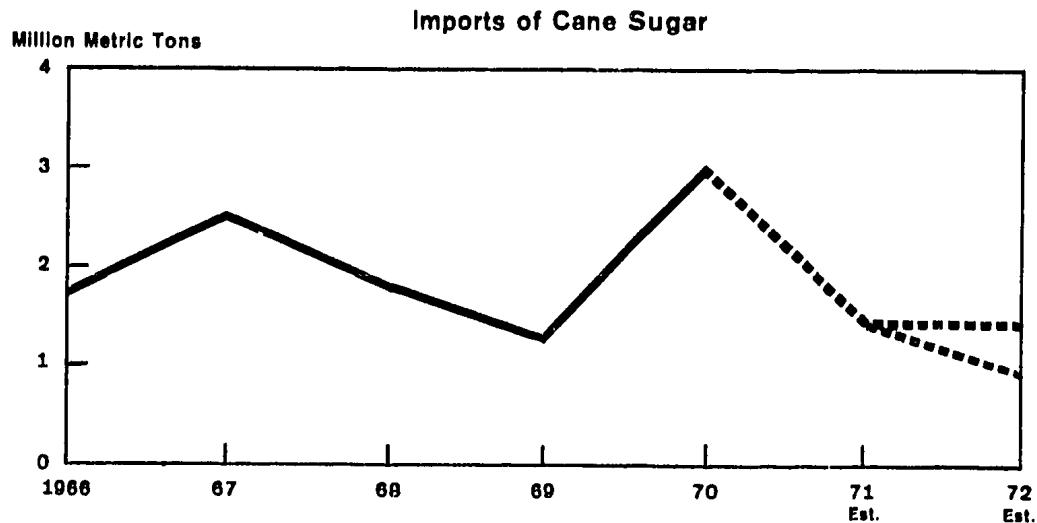
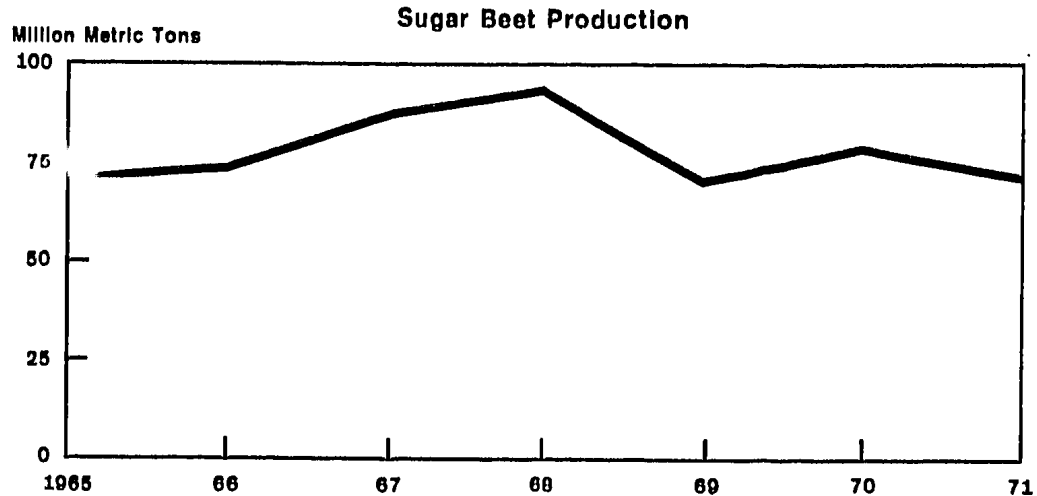
44. These recent contracts should be sufficient to fill the immediate gap between sugar production and requirements for domestic consumption and export. The drop of 8% in sugar beet production in 1971 was the result of a retrenchment in sown area as well as adverse weather. An increase in sown area could, of course, increase sugar beet production rather easily. Since the area under sugar beets normally amounts to less than 2% of the total sown area, an expansion of the beet crop area seems likely in 1972. In addition, there is a good chance that yields will improve.

18. Purchase contracts for about 500,000 tons of sugar from Australia and Brazil have been confirmed.

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CONFIDENTIAL**Figure 3****Imports from Cuba Fall to Offset Poor Soviet Harvests in 1970-71 . . .**

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Meat

45. In 1971 the domestic meat supply situation eased, continuing the improvement shown in 1970. Collective farm market prices, the best available barometer of changes in demand and supply, dropped somewhat, and per capita meat consumption increased by 5.5%, reaching nearly 88 pounds. Nevertheless, individual consumption is still markedly below that

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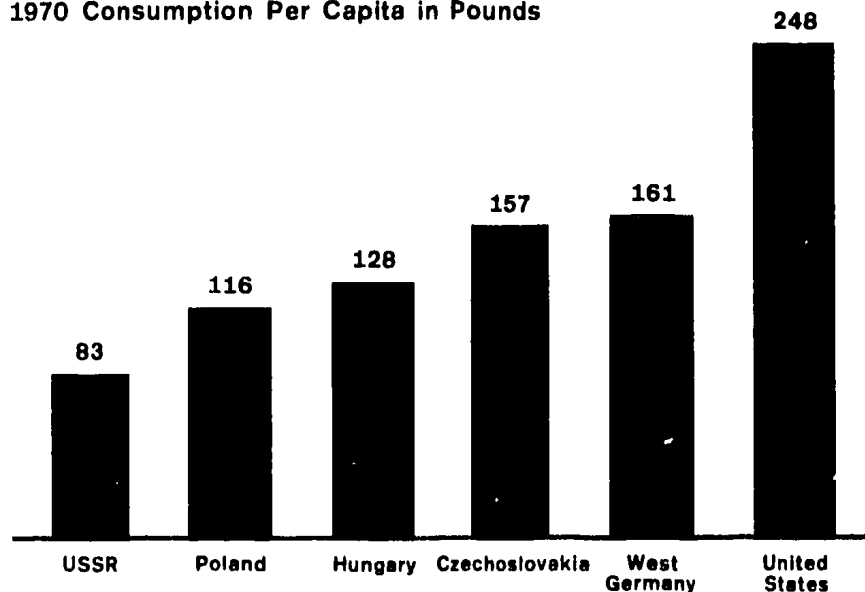
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of other countries (see Figure 4). Moreover, surveys of shops in various Soviet cities showed little or no meat in 1971 in almost one-half of the cities visited, indicating that the supply of meat is still far short of satisfying demand.

**Russian Meat Consumption Lags Behind
East European and Western Countries . . .**

Figure 4

1970 Consumption Per Capita in Pounds



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46. Continued growth in domestic meat output accounted for almost all of the 1971 increment in consumption. Although purchases of beef and mutton from Australia and New Zealand and poultry from Western Europe were sizable, net meat imports represented only about 1% of total meat consumption. Total meat imports in 1971 probably were close to the 165,000 tons imported during 1970. According to confirmed contracts and shipment information, imports from hard currency areas increased from 86,000 to about 100,000 tons.

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47. The Soviet leadership seems committed to increasing the supply of meat. The volume of meat passing through state slaughterhouses and processing plants in January and February 1972 was 9% higher than in

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the first two months of 1971.⁽¹⁹⁾ Nevertheless, demand for meat will continue to grow, at least over the next few years, and not all of this demand will be satisfied. Preliminary studies suggest that in the USSR the increase in the demand for meat in response to a change in personal income is high - demand tends to grow in proportion to a rise in income. Per capita disposable incomes increased by 6% in both 1970 and 1971 and should rise at almost the same rate over the next few years, bolstering demand for meat about proportionately. Per capita meat output is scheduled for a yearly increase of only about 4% during the current five-year plan. Thus, unsatisfied demand for meat will probably increase even if meat production plans are fulfilled. Failure to achieve production goals might induce the leadership to increase meat imports further. Such imports would presumably be a last resort, however, because of the high cost and the lack of readily available supplies in the world market.

19. This so-called "industrial" production of meat accounted for 58% of all meat output in 1970.

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APPENDIX

Note on Soviet Grain Reserves

Until recently, comparison of Soviet grain production with domestic requirements (food, feed for livestock, seed for succeeding crops, and industrial use) plus net exports suggested an accumulation of breadgrain in reserves of 20 million to 25 million tons at the end of FY 1970.⁽¹⁾ Reserves of this size would represent about one-half of the annual consumption of grain for food and would provide the USSR with a comfortable hedge against major shortfalls in the grain crop.⁽²⁾ Now, it appears that these estimates of grain reserves suitable for human consumption were too high. New evidence has come to light indicating that in the last few years (1) considerably more grain (including wheat) has been utilized as seed than had been previously estimated, and (2) because of poor quality control, a sizable proportion of wheat stocks carried over from earlier crop years is probably unsuitable for human consumption.

Use of Grain for Seed

New information indicates that the officially recommended seeding rates for various types of grain were raised significantly in the latter half of the 1960s and are now nearly one-half higher than the rates promulgated in the latter part of the 1950s. As a result, the current seed norms imply the use of several million more tons of wheat each year for seeding than was implied by norms used in the late 1950s.

The seeding norms currently decreed by the Ministry of Agriculture for wheat are double to triple those used for climatically analogous areas in the United States and Canada. If it is assumed that the higher seeding rates for the USSR were in use for the period 1966-70, the ratio of wheat yields to seeding rates in the United States and the USSR were as follows:

1. Incomplete data are published on the utilization of grain in the Soviet Union, and statistics on stocks are closely guarded secrets. Given the structure and use of Soviet grain crops, it can be surmised that grain reserves are limited almost entirely to wheat. The known uses of rye, the other breadgrain, for food or industrial purposes exhausted the total available and, hence, did not permit the setting aside of rye for feeding livestock or as carryover stocks.
2. Relative stagnation in grain production in the years before two major crop failures (1963 and 1965) caused a drawdown of grain reserves to a low level, but it had been assumed that a series of good to excellent crop years (1966, 1968, and 1970) together with the absence of severe crop failures had permitted a substantial replenishment of grain reserves.

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	<u>United States</u>	<u>USSR</u>
Winter wheat	28 to 1	8 to 1
Spring wheat	21 to 1	4-1/2 to 1

With specifications for quality of seed roughly the same in both countries (95% germination, 1% dockage), there is a presumption that the much higher Soviet seeding rates are due primarily to a poorer preparation of the seedbed, resulting in a heavy loss of seed. Other reasons for the heavy seeding rates include a slightly shorter growing season compared with that in the United States and Canada and differences in the grain varieties. The higher seeding rates associated with a shorter growing season were of particular importance in 1969 and again in 1971 when a cool, wet spring delayed sowings by 10-15 days.

Problems with Quality

A substantial decline in wheat quality, as measured by the quantity and quality of protein and gluten present, degrades the final baked product, especially bread. Although complaints in the Soviet press of declining wheat quality blame farming practices during both cultivation and harvesting as well as storage practices, the quality problems that have been of greatest concern recently have been those associated with storage practices.

Soviet press discussion of the problems related to substandard grain suggests that the affected wheat can be reclaimed only for industrial use (for example, alcohol production) or for livestock feed. The problem is further complicated by the fact that in most cases of deterioration the quality rather than the quantity of the protein and gluten is affected. Therefore, since only quantitative measures are used in testing wheat for protein and gluten content, the baked product must be observed before the full extent of deterioration can be assessed.⁽³⁾

Of the wheat procured by the government from the 1969 and 1970 crops, that which is unfit for human consumption has probably been detected and, if salvageable, subsequently removed from storage and used as livestock feed. Nevertheless, because of the difficulties of detecting grain with low protein and gluten quality, as opposed to quantity, a sizable share

3. In contrast to protein and gluten quantity which can be measured in the grain, protein and gluten quality can be determined only from the milled flour. Potential bread-baking strength can be estimated from the so-called "dough-ball test," but a baked product is the best quality test.

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of the grain remaining in carryover stocks from those two crop years may be of substandard quality.

Outlook

A drawdown of wheat stocks to supplement regular supplies of feed grains, coupled with a downward revision in the level of carryover stocks of wheat suitable for consumption as food, is believed to have brought grain stocks to near minimum levels.⁽⁴⁾ Without attempting to be precise in making a revised estimate of carryover stocks of grain, it appears likely that the USSR is in a shaky position. If, for example, production in 1972 is below the 1971 level, the regime would probably be forced to import grain beyond the quantity already contracted for or face the consequences of a deterioration in the quality of the daily diet as a greater share of the available grain is used for bread instead of for livestock feed to produce meat.

4. That is, inventories held as buffer stocks to minimize the effects of harvest shortfalls. In addition to stocks to cover normal requirements, some unknown quantity of inventories of grain is held for strategic purposes to supply the military forces and the economy with needed food in time of war. Presumably, at the point when total grain reserves consist solely of strategic stocks, the regime will feel compelled to authorize imports.

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